COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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November 8, 2005

IN REPLY PLEASE
REFER TO FILE: WM-9
B-602

TO: Each Supervisor

FROM: Donald L. Wolfe
Director of Public Works

TOTAL MAXIMUM DAILY LOAD REGULATIONS IN THE COUNTY OF LOS ANGELES

In a memorandum dated July 31, 2002, Public Works briefed you on the estimated monetary cost to comply with the Los Angeles River and Ballona Creek Trash Total Maximum Daily Loads (TMDLs). Subsequently, on September 15, 2003, we followed with an update on the Bacteria TMDL for Santa Monica Bay Beaches. This memorandum is to inform you of the latest TMDLs affecting the County and to convey the significant economic impact they will have in the foreseeable future.

Currently, ten TMDLs are in effect in the County, with another five expected to come into effect by June 2006. The total cost to the County to comply with these TMDLs is expected to be in the hundreds of millions of dollars over the next 10 to 20 years, but cannot be quantified more precisely without a comprehensive study. That cost can easily double as additional TMDLs are established over the next several years. As an indication, in the last three years, Public Works has spent roughly $16.2 million on TMDL-related projects, most of which are aimed at initial compliance efforts with the Bacteria TMDLs in Santa Monica Bay and the Trash TMDLs in Los Angeles River and Ballona Creek.

Of the upcoming TMDLs, we expect those in the Los Angeles River, Malibu Creek, and Marina del Rey Harbor Watersheds to most affect the County as these watersheds encompass significant unincorporated areas. Achieving compliance will require a combination of institutional and engineered solutions, with compliance during and immediately after storms representing the largest challenge technically, economically, and politically.

Additional information about each TMDL, including costs estimates, can be found in the attached *TMDLs in the County of Los Angeles* Report.

The County of Los Angeles and the Flood Control District are currently in full compliance with the minimum requirements of the National Pollutant Discharge Elimination System Permit and the TMDLs. In fact, we exceed minimum requirements in areas where we see potential for substantial cost-effective water quality enhancement. The Department proactively takes a leadership role with the copermittees in encouraging a coordinated effort, developing and testing water quality programs and structural solutions, conducting public education campaigns, and in identifying funding sources.

If you have any questions, please call me or your staff may contact Mark Pestrella, Assistant Deputy Director, at (626) 458-4300.

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Attach.

cc: Chief Administrative Office
County Counsel
Executive Office
Department of Beaches and Harbors (Paul Wong)
Department of Health Services (Richard Wagener)

TMDLs

IN THE

COUNTY OF LOS ANGELES

County of Los Angeles Department of Public Works
Watershed Management Division

November 2005

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Preface

Federal Clean Water Act mandates the United States Environmental Protection Agency and states to establish Total Maximum Daily Load (TMDL) regulations to restore and protect the health of the nation's surface waters when they become contaminated despite existing pollution control programs. A TMDL is simply defined as the amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to each pollutant source within the tributary watershed. The Los Angeles Regional Water Quality Control Board is responsible for developing TMDLs in the County of Los Angeles. The first TMDL in the County was established in 2000; and in the ensuing years, nine more have been added. By 2012, up to thirty TMDLs will have been established to restore and protect the County's streams, lakes, and shoreline. Achieving compliance and restoring the health of the County's aquatic resources pose a monumental challenge technologically, economically, and politically.

The intent of this report is to communicate these challenges to County decision makers through brief overviews of each TMDL currently in effect in the County, as well as those on the immediate horizon. Greater emphasis is placed on those TMDLs having a more significant impact on the County than those having less of an impact. To date, discussions related to cost sharing for compliance with the TMDLs has focused on relative land area within the jurisdictional control of each responsible agency. Consequently, TMDLs within watersheds containing relatively large areas of unincorporated County will have greater impact on the County. We expect to update this report periodically as new TMDLs are added and progress is made on complying with existing TMDLs. Additional information can be obtained by contacting the Watershed Management Division at the County of Los Angeles Department of Public Works at http://www.ladpw.org/WMD/.

County of Los Angeles Department of Public Works

Watershed Management Division

November 2005

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Supervisorial Districts and Major Watersheds

While TMDLs are established for specific bodies of water with natural watershed boundaries, their implementation often have as much to do with political boundaries as hydrologic ones. This section is intended to clarify the relationship between those political and hydrologic boundaries. Specifically, Tables 1 and 2 and Figures 1 through 6 illustrate major watersheds within the County of Los Angeles and the Supervisorial Districts these watersheds affect.

Table 1. Supervisorial Districts and the major watersheds within each.

	District 1	District 2	District 3	District 4	District 5
Ballona Creek	○	●	●	○	
Dominguez Channel		●		●	
Los Angeles River	●	●	●	●	●
Malibu Creek			●		
Marina del Rey Harbor		●	●	●	
Santa Monica Bay		○	●	●	
San Gabriel River	●			●	●
Santa Clara River					●

Notes:

● Major Impact

○ Minor Impact

No Impact

Table 2. TMDLs in the County of Los Angeles

TMDL	Currently in Effect	In Effect by June 2006	Affected District(s)	Reference Report Page Number
Ballona Creek Trash	X		1, 2, 3, 4	19
Ballona Creek Estuary Toxic Pollutants		X	1, 2, 3, 4	21
Ballona Creek Metals		X	1, 2, 3, 4	23
Los Angeles Harbor Bacteria	X		2, 4	27
Los Angeles River Metals		X	1, 2, 3, 4, 5	31
Los Angeles River Nutrients	X		1, 2, 3, 4, 5	33
Los Angeles River Trash	X		1, 2, 3, 4, 5	35
Malibu Creek Bacteria		X	3	39
Marina del Rey Bacteria	X		2, 3, 4	43
Marina del Rey Toxic Pollutants		X	2, 3, 4	45
San Gabriel River East Fork	X		5	51
Santa Clara River Nutrients	X		5	57
Santa Clara River Chloride	X		5	55
Santa Monica Bay Beaches Bacteria for Dry Weather	X		2, 3, 4	61
Santa Monica Bay Beaches Bacteria for Wet Weather	X		2, 3, 4	61

Figure 1. Watersheds and Supervisorial Districts in Los Angeles County.

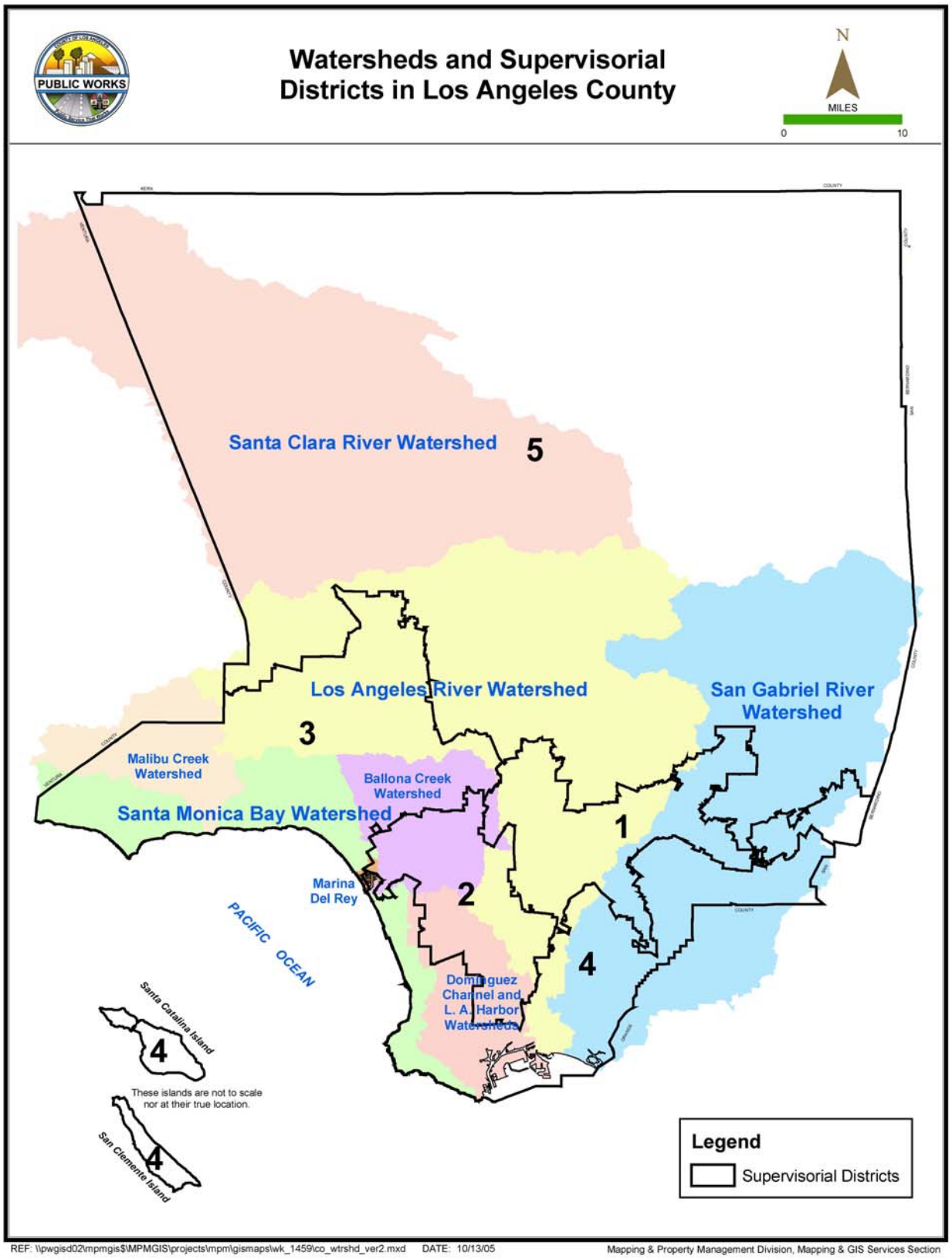

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Figure 2. Major Watersheds in Supervisorial District 1

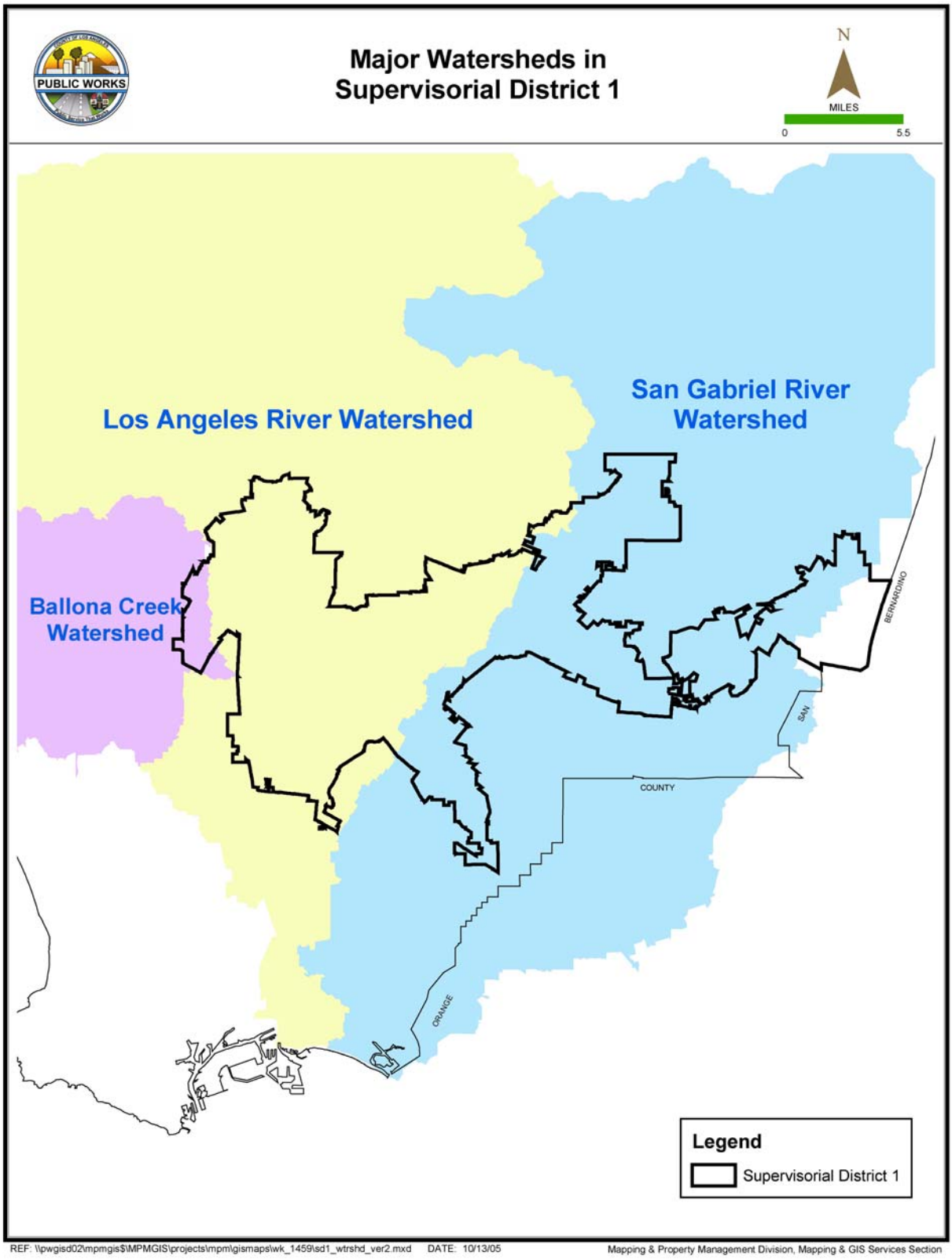

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Figure 3. Major Watersheds in Supervisorial District 2.

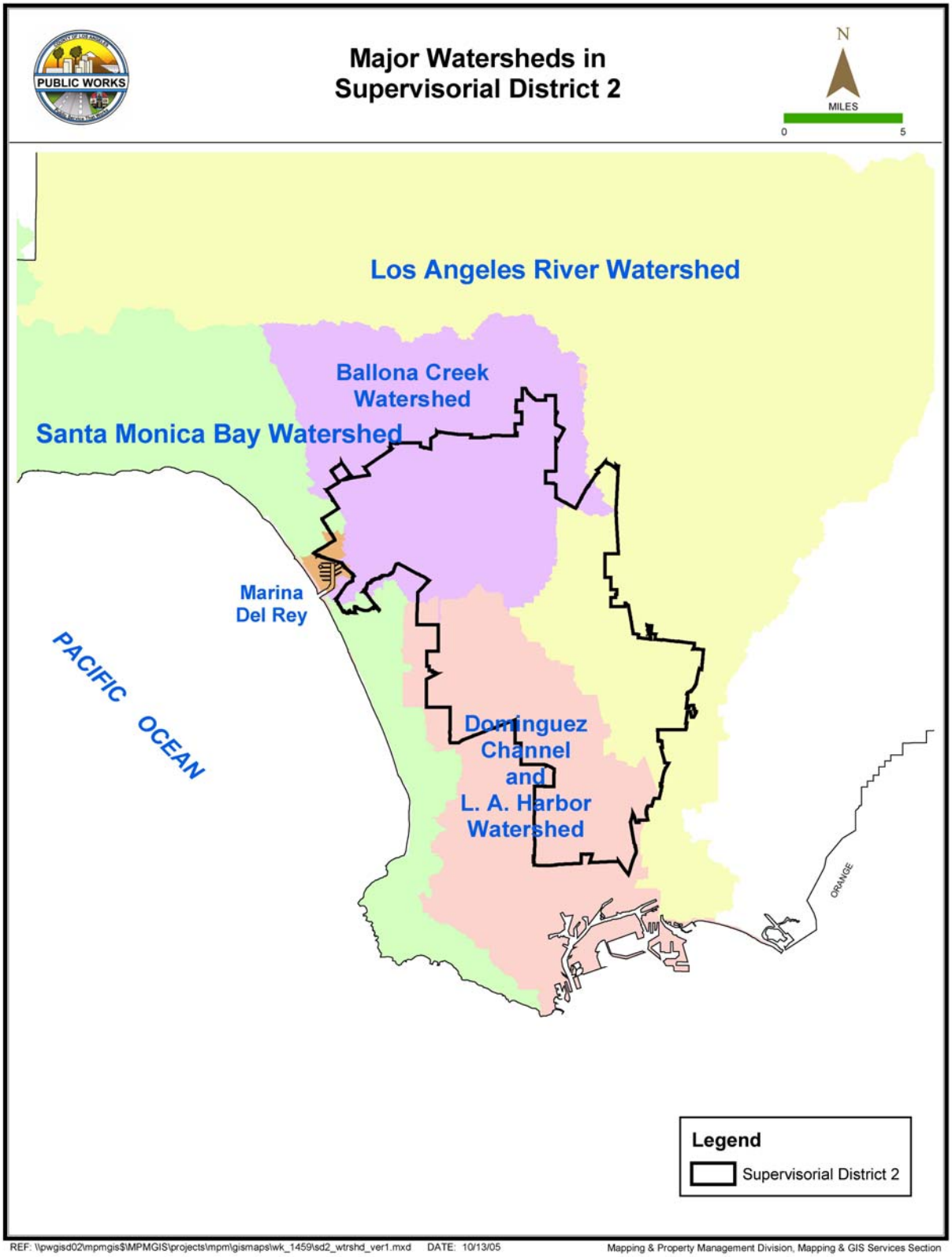

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Figure 4. Major Watersheds in Supervisorial District 3.

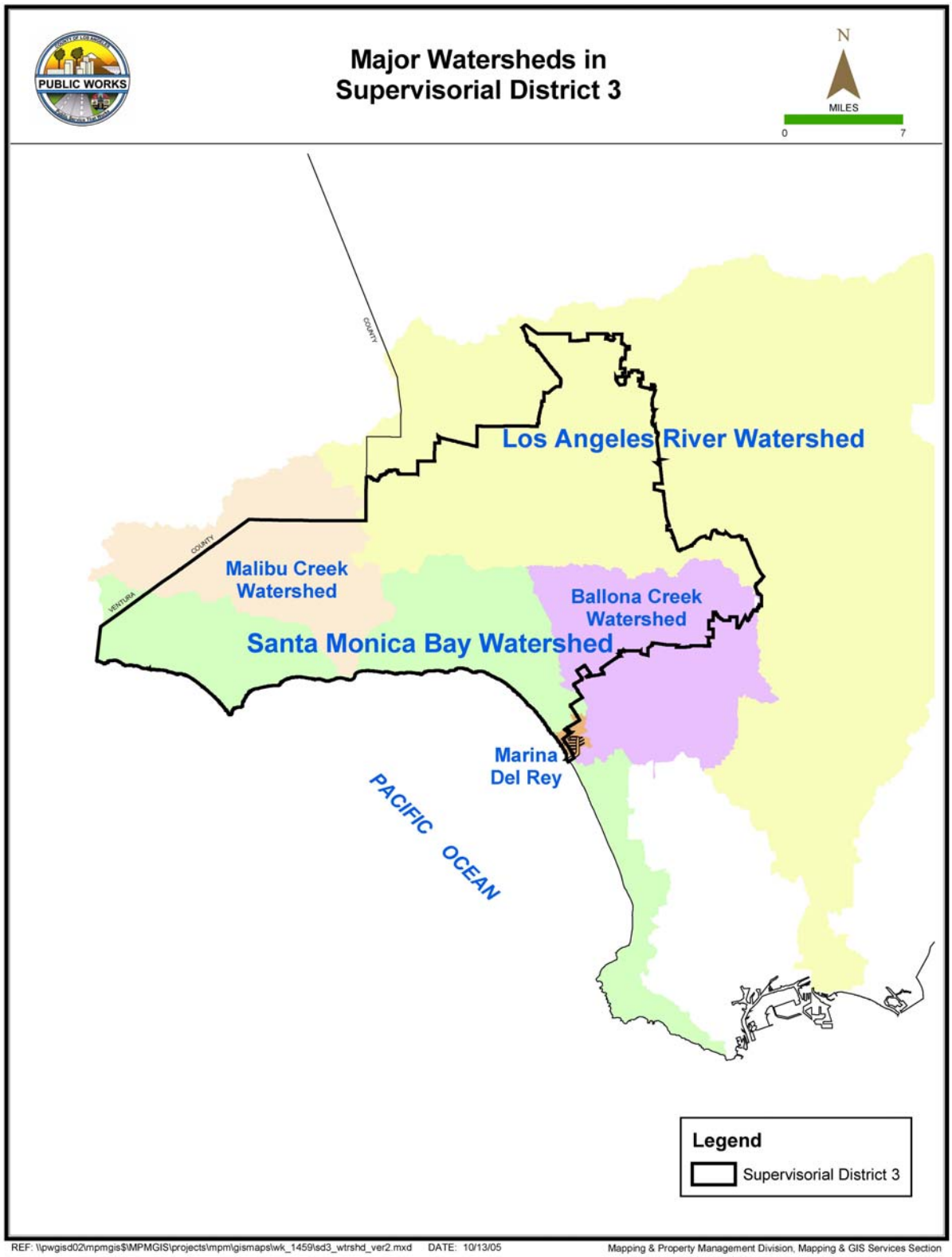

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Figure 5. Major Watersheds in Supervisorial District 4.

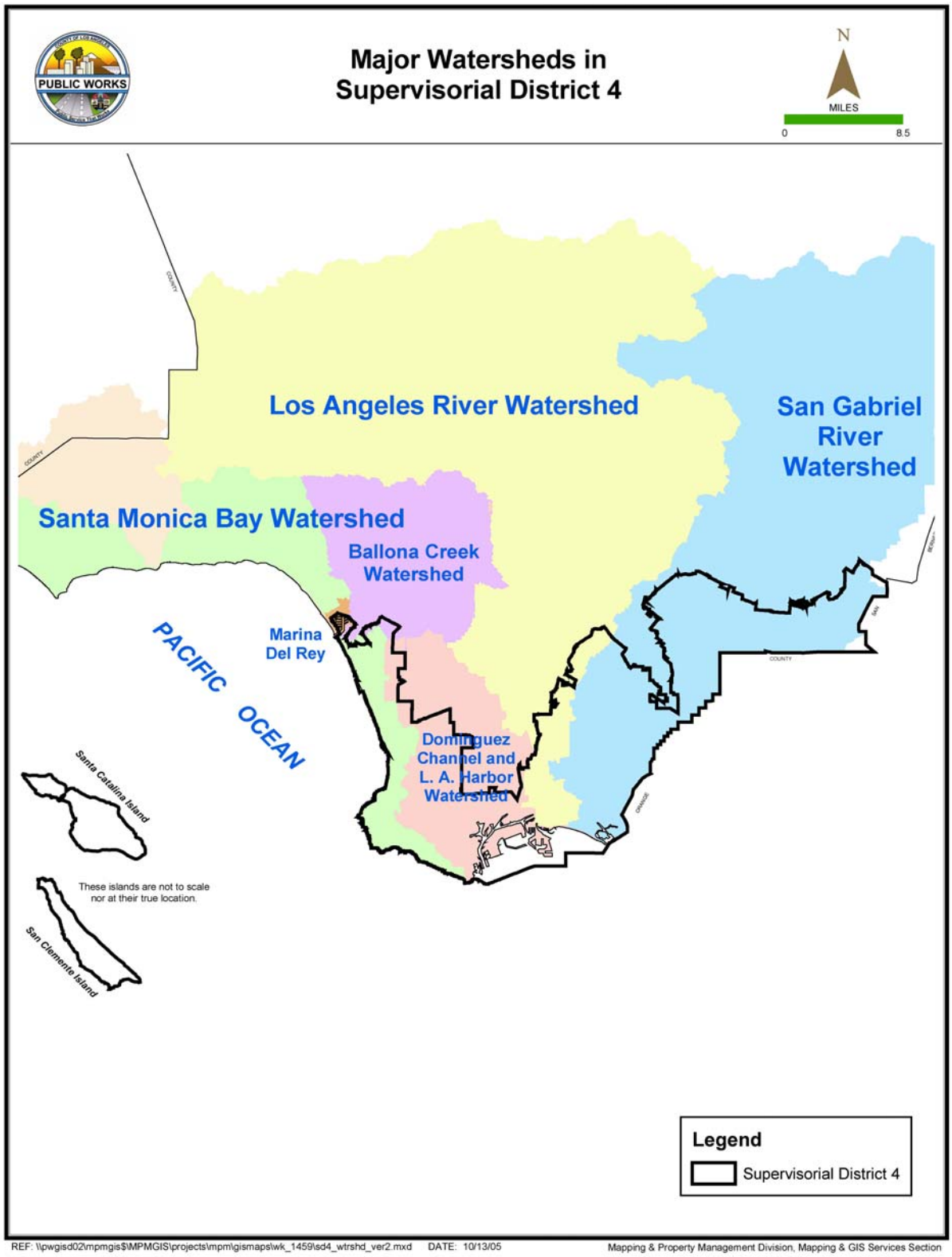

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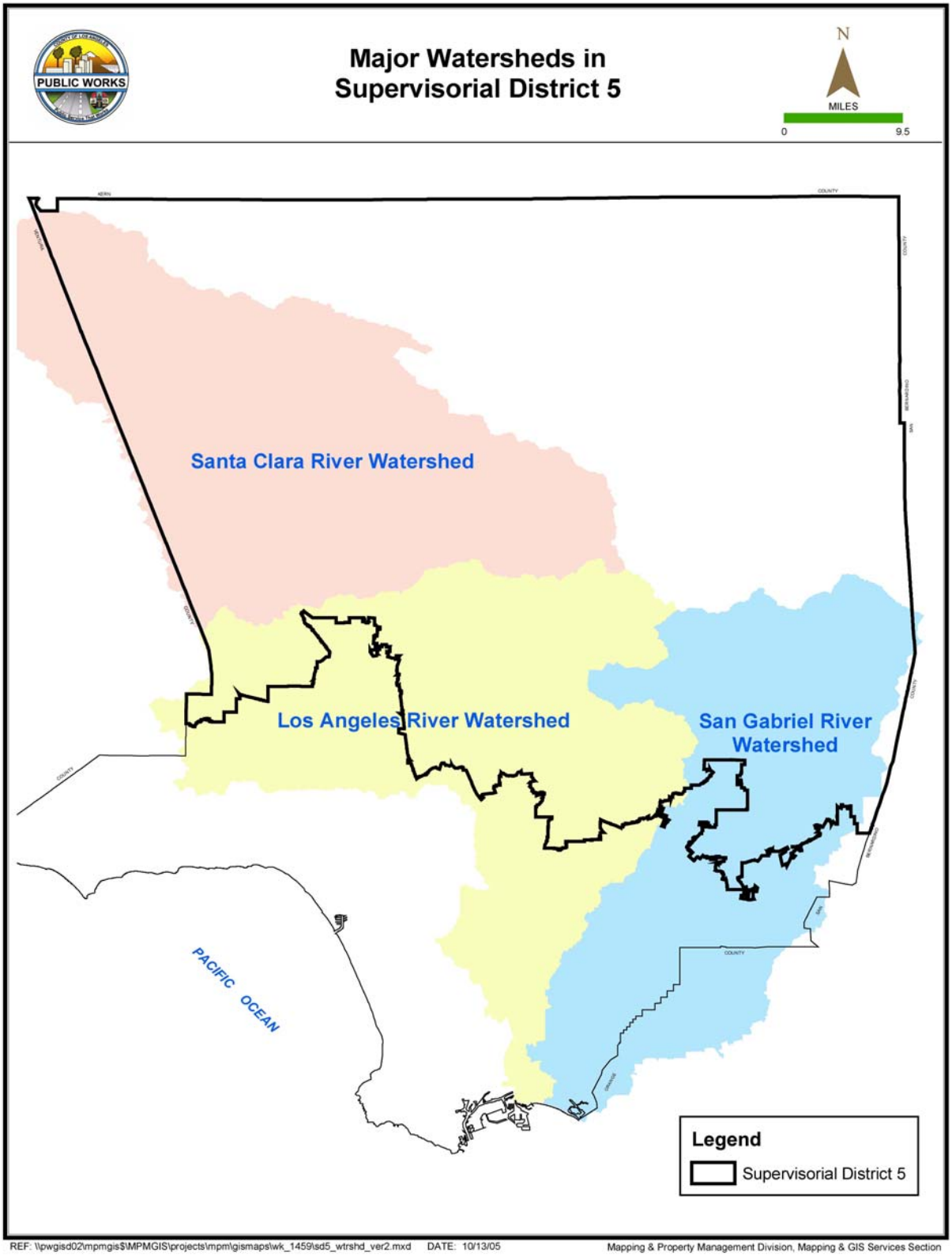
Figure 6. Major Watersheds in Supervisorial District 5.



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Ballona Creek Watershed

Located in the western portion of the Los Angeles Basin, the Ballona Creek Watershed covers approximately 128 square miles and contains the Culver City, Wilshire, and Hollywood subwatersheds. About 85% of the watershed land use is classified as residential (52%), vacant (21%), or commercial and public (12%). The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Originally, Ballona Creek was a naturally-occurring soft bottom creek that helped alleviate flood waters from the surrounding communities. Today, Ballona Creek has been modified into a complex drainage system of storm drains, underground culverts, and open concrete channels to more efficiently address flood water conditions in Los Angeles County. The water quality problems in Ballona Creek have led to the development of several TMDLs to mitigate the poor water conditions in the watershed. Currently, the Los Angeles Regional Water Quality Control Board has adopted three TMDLs in this watershed: 1) Ballona Creek Trash TMDL (2002); 2) Ballona Creek Metals TMDL (2005); 3) Ballona Creek Toxics TMDL (2005). The County anticipates the promulgation of a Ballona Creek Bacteria TMDL in Spring 2007.

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Ballona Creek Trash TMDL

Affected District(s): 1, 2, 3, 4

Effective Date: August 1, 2002

Responsible Agencies: County of Los Angeles, Caltrans, Cities of Los Angeles, Culver City, Beverly Hills, Santa Monica, West Hollywood, and Inglewood. The TMDL designates the City of Los Angeles as the primary jurisdiction. Non-stormwater NPDES permittees, General Industrial Stormwater Permittees, and General Construction Stormwater Permittees all have compliance responsibilities under this TMDL.

Requirements Affecting Los Angeles County:

Deadline (from Effective Date)	Action
1 – 2 years	Conduct baseline monitoring program.
3 – 10 years	Achieve 20% trash reduction starting in year 3, followed by an incremental reduction of 10% per year through year 10.
6 years	RWQCB will re-consider the TMDL when 50% trash reduction is achieved (estimated date: 10/1/08)
12 years	Achieve zero trash target.

Potential Benefit: Large amount of trash is washed into the ocean and onto Santa Monica Bay beaches after large storms each year. This trash not only harms aquatic life but also present a health hazard to millions of beach goers. If left unaddressed, trash pollution in the ocean and on area beaches is likely to worsen as population continues to increase. Compliance with this TMDL ensures that tons of trash will be intercepted from Ballona Creek each year before entering the Santa Monica Bay.

Status: Our implementation strategy currently includes providing enhanced street sweeping, additional trash receptacles, greater public outreach, and installation of

engineered solutions such as trash screens in catch basins. Today, 86% of all catch basins within the unincorporated County area have been retrofitted with inserts and trash screens. The remaining catch basins will be retrofitted by September 2006. The current strategy is to achieve a 50% reduction to trigger reopening the TMDL. We are hopeful information and experiences prior to the reopener will result in a recognition by the Los Angeles Regional Water Quality Control Board that the zero target is both impractical and unnecessary. Additional compliance measures, however, will likely be needed following the reopener.

Fiscal Impact: Thus far, the construction cost for the newly-installed inserts and screens is about $600,000. The installation costs for the remaining inserts and screens will be about $100,000. The estimated cost to operate and maintain the catch basin inserts and screens is $260,000 per year.

Ballona Creek Estuary Toxic Pollutants TMDL

Affected District(s): 1, 2, 3, 4

Effective Date: December 2005 (tentative)

Responsible Agencies: County of Los Angeles, Caltrans, Cities of Los Angeles, Culver City, Beverly Hills, Santa Monica, West Hollywood, and Inglewood. The TMDL designates the City of Los Angeles as the primary jurisdiction. Non-stormwater NPDES permittees, General Industrical Stormwater Permittees, and General Construction Stormwater Permittees will all have compliance responsibilities under this TMDL.

Requirements Affecting Los Angeles County:

Deadline (from Effective Date)	Action
6 months	Numeric Target and Waste Load Allocation Re-Evaluation
12 months	Submit Coordinated Monitoring Plan
4 and 4 ½ years	Submit Draft and Final Implementation Plans
5 years	Submit Applicable Special Studies
6 years	TMDL Implementation Schedule and Waste Load Allocation Re-Evaluation
7 years	Demonstrate 25% Compliance with Waste Load Allocations
9 years	Demonstrate 50% Compliance with Waste Load Allocations
11 years	Demonstrate 75% Compliance with Waste Load Allocations
15 years	Demonstrate 100% Compliance with Waste Load Allocations

Potential Benefit: The Ballona Creek Estuary sustains a surprisingly wide array of aquatic and other wildlife; consequently, the State of California has designated a long string of beneficial uses for this vanishing resource in urban Southern California, including warm fresh water habitat, marine habitat, migration of aquatic organisms, rare and threatened or endangered species, etc. This TMDL resulted from evidence of sediment toxicity from the continual deposition of toxic substances such as copper and lead. There may also be bioaccumulation of these toxins in aquatic life which may be detrimental to human health if consumed. Compliance with this TMDL will improve water and sediment quality in the estuary and restore its capacity to sustain its designated beneficial uses.

Status: Because of the limited unincorporated area within the Ballona Creek watershed, this TMDL's financial burden on the County is expected to be small compared to that on the City of Los Angeles. Nevertheless, as the owner of an extensive stormdrain network within the watershed, including most of the Ballona Creek, the County Flood Control District will play a key role in the TMDL's implementation. Public Works recently began working with other responsible agencies to prepare the coordinated monitoring plan due to the RWQCB by late 2006. Formulation of implementation strategies has not begun, but it is expected to encompass both institutional and engineered solutions.

Fiscal Impact: The RWQCB and USEPA estimates the cost to comply with this TMDL and the Ballona Creek Metals TMDL to be about $350 million total. If cost sharing continues to be proportionate to the amount of each responsible agency's jurisdictional area within the watershed, the County's share is expected to be less than 10 percent, or $35 million, over 15 to 18 years. However, we believe the actual cost to comply will be higher, although a more precise estimate is not possible without further study.

Ballona Creek Metals TMDL

Affected District(s): 1, 2, 3, 4

Effective Date: December 2005 (tentative)

Responsible Agencies: County of Los Angeles, Caltrans, Cities of Los Angeles, Culver City, Beverly Hills, Santa Monica, West Hollywood, and Inglewood. The TMDL designates the City of Los Angeles as the primary jurisdiction. Non-stormwater NPDES permittees, General Industrical Stormwater Permittees, and General Construction Stormwater Permittees will all have compliance responsibilities under this TMDL.

Requirements Affecting Los Angeles County:

Deadline (from Effective Date)	Action
12 months	Submit Coordinated Monitoring Plan
4 years	Submit Draft Implementation Plan
4 ½ years	Submit Final Implementation Plan
4 years	Submit Special Study Results
5 years	TMDL Implementation Schedule and Waste Load Allocation Re-Evaluation
6 years	Demonstrate 50% Dry Weather Compliance Demonstrate 25% Wet Weather Compliance
8 years	Demonstrate 75% Dry Weather Compliance
10 years	Demonstrate 100% Dry Weather Compliance Demonstrate 50% Wet Weather Compliance
15 years	Demonstrate 100% Wet Weather Compliance

Potential Benefit: This TMDL is closely linked to the Toxic Pollutants TMDL for Sediment in the Ballona Creek Estuary. Metals attached to suspended solids particles are carried out to sea during every storm, and the larger particles deposit in the estuary where the flow slows. Over time, the levels of toxic pollutants build up in the estuary, degrading its ability to sustain beneficial uses. Compliance with this TMDL will improve water quality in Ballona Creek for the purposes of safeguarding aquatic life. This remediation will re-establish recreational, marine, wildlife, fishing, and shellfish harvesting beneficial uses.

Status: The TMDL is pending State Water Resources Control Board approval. Public Works recently began working with other responsible agencies to discuss this TMDL's implementation. Development of a coordinated monitoring plan has begun and will continue over the year following USEPA adoption of the TMDL. Implementation will likely involve a combination of institutional and engineered solutions; but no detailed strategies have been discussed.

Fiscal Impact: The RWQCB and USEPA estimate the cost to comply with this TMDL and the Ballona Creek Metals TMDL to be about $350 million total. If cost sharing continues to be proportionate to the amount of each responsible agency's jurisdictional area within the watershed, the County's share is expected to be less than 10 percent, or $35 million, over 15 to 18 years. However, we believe the actual cost to comply will be higher, although a more precise estimate is not possible without further study.

Dominguez Channel Watershed

Located in the southwest portion of the Los Angeles Basin, the Dominguez Channel Watershed covers approximately 133 square miles. It is the County's most highly urbanized watershed and consists of two hydrologic subunits. The northern subunit drains into the Dominguez Channel, while the southern subunit drains directly into the Los Angeles and Long Beach Harbor Area. About 85% of the watershed land use is classified as residential (41%), industrial (17%), commercial and public (14%), or Transportation and Utilities (13%). The headwaters of Dominguez Channel consists of an underground stormdrain system which daylights about 0.25 miles north of the Hawthorne Municipal Airport. To-date, one TMDL addressing bacteriological impairment in the Los Angeles Harbor has been promulgated. Several more are under development by the LARWQCB and the USEPA to address a variety of water quality problems, including nutrients, metals, trash, and organics. These are expected to become effective from 2008 to 2012.

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Los Angeles Harbor Bacteria TMDL

Affected District(s): 2, 4

Effective Date: March 10, 2005

Responsible Agencies: County of Los Angeles, City of Los Angeles, and Port of Los Angeles

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
6 months	Submit work plan to assess water quality in the Inner Harbor
2 ½ years	Submit implementation plan
4 years	RWQCB Re-considers TMDL
5 years	Achieve compliance with TMDL

Potential Benefit: The TMDL addresses two separate bodies of water: the Inner Cabrillo Beach and the Main Ship Channel. The County is only responsible for the Main Ship Channel portion of the TMDL. Historical data links dry-weather bacteriological water quality impairment in the Main Ship Channel to urban runoff from stormdrains. Achieving compliance with this TMDL may improve bacteriological water quality within the Los Angeles Harbor's Main Ship Channel area and lessen the risk of adverse health effects on industrial divers coming in contact with the water.

Status: A draft work plan to assess the water quality in the Inner Harbor was submitted to the RWQCB in September 2005 and is pending approval. The TMDL does not contain a wet-weather implementation schedule because, according to the RWQCB, existing data show no wet-weather impairment.

Fiscal Impact: The County is expected to have a minor role in this TMDL's implementation compared to that for the City of Los Angeles and the Port of Los

Angeles. Achieving compliance is expected to involve the physical diversion of dry-weather flows from up to 6 Flood Control District drains to the Terminal Island Sewage Treatment Plant at a cost of $1 million each, plus annul operational and maintenance costs.

Los Angeles River Watershed

The Los Angeles River Watershed is one of the largest in the region, draining an area of 834 square miles and touching all five Supervisorial Districts. The Los Angeles River flows for 51 miles from the Santa Monica Mountains to the Pacific Ocean at San Pedro Bay. More than half of the watershed is developed, including predominantly residential followed by commercial and industrial land uses. Approximately 40%, or 324 square miles, are vacant and open space concentrated mainly in the San Gabriel Mountains and around the Los Angeles River headwaters in the north. Two TMDLs have been promulgated to-date, one for trash (2002) and another for nutrients (2004. The trash TMDL was overturned by court in 2003, a decision that is currently under appeal by the RWQCB. Forthcoming TMDLs include those addressing metals (2005), organics (2007), and bacteria (2008).

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Los Angeles River Metals TMDL

Affected District(s): 1, 2, 3, 4, 5

Effective Date: December 2005 (tentative)

Responsible Agencies: Municipal Stormwater Permit holders including the County of Los Angeles and 42 municipalities; Caltrans; Industrial Stormwater Permit holders; Construction Stormwater Permit holders; as well as other minor NPDES Permit holders and Publicly Owned Treatment Works (POTWs).

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
15 months	Submit a monitoring plan & begin upon approval
2 years	Provide a written report outlining how the subwatersheds will achieve compliance
5 years	RWQCB to reconsider the TMDL to re-evaluate the waste load allocations and the implementation schedule
6 years	Achieve compliance for 50% of the total drainage area served by stormdrain system for dry-weather Achieve compliance for 25% of the total drainage area served by the stormdrain system for wet-weather
14 years	Achieve compliance for 75% of the total drainage area served by stormdrain system for dry-weather
18 years	Achieve compliance for 100% of the total drainage area served by stormdrain system for dry-weather Achieve compliance for 50% of the total drainage area served by stormdrain system for wet-weather
22 years	Achieve compliance for 100% of the total drainage area served by stormdrain system for dry-weather and wet-weather

Potential Benefit: Metals attached to suspended solids particles are carried out to sea during every storm; the larger particles deposit in the Long Beach Harbor where the flow slows. Over time, the levels of toxic pollutants build up in the Harbor, degrading its ability to sustain beneficial uses. Achieving compliance with this TMDL will reduce the amount of toxic pollutants in the Los Angeles River as well as in Long Beach Harbor and restore and protect the river's value as aquatic wildlife habitat and municipal water supply.

Status: This TMDL is pending approval by the State Water Resources Control Board. Aerial deposition of metals laden dust particles is believed to contribute significantly to water quality impairments. Public Works is working with the RWQCB, Southern California Association of Governments, the Southern California Air Quality Management District, the SWRCB, California Air Resources Board, and other stakeholders to explore source control alternatives. We expect that dry weather compliance can be achieved primarily through the physical diversion of urban stormdrain runoff to sewer treatment plants. On the other hand, short of constructing costly waste water treatment plants, we know of no available technology to achieve 100 percent compliance during wet weather.

Fiscal Impact: Achieving compliance with this TMDL is expected to cost $1.4 Billion according to a RWQCB and USEPA estimate. Of that amount, we expect the County to shoulder about $360 million. These numbers are very rough, and in our opinion, on the low end. These estimated costs are based on the various types of structural and non-structural systems that could be used to achieve compliance with municipal stormwater requirements throughout the Los Angeles River Watershed.

Los Angeles River Nutrients TMDL

Affected District(s): 1, 2, 3, 4, 5

Effective Date: July 10, 2003

Responsible Agencies: Major Publicly Owned Treatment Works (POTWs) including Donald C. Tillman Water Reclamation Plant, Los Angeles-Glendale Water Reclamation Plant, and Burbank Water Treatment Plant); Municipal Stormwater Permit holders including the County of Los Angeles and 42 municipalities; minor NPDES Permit holders

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
1 year	Submit a monitoring plan to estimate nutrient contribution from the stormdrain system

Potential Benefit: Excessive levels of nitrogen compounds, namely nitrate, nitrite, and ammonia, in a water body contribute to nuisance algal growth and decreased oxygen content in the water. However, the bulk of nitrogen compounds in the Los Angeles River can be attributed to water treatment plant discharges and less so to stormdrains. Nevertheless, achieving compliance with this TMDL will improve and protect the aquatic wildlife habitat as well as eliminate nuisance algae common in portions of the Los Angeles River.

Status: We submitted the monitoring plan to the RWQCB in March 2005 and are awaiting its approval. Besides water quality monitoring, Los Angeles County is expected to have a minor role in this TMDL's implementation compared to that for the major POTWs and the City of Los Angeles.

Fiscal Impact: The additional water quality monitoring associated with this TMDL is expected to cost the County less than $50,000 per year.

Los Angeles River Trash TMDL

Affected District(s): 1, 2, 3, 4, 5

Effective Date: September 30, 2002 (has since been overturned as result of Court order, which is under appeal by the RWQCB)

Responsible Agencies: County of Los Angeles, Caltrans, City of Los Angeles, and 41 other municipalities within the Los Angeles River watershed.

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
1 – 2 years	Conduct baseline monitoring program.
3 – 10 years	Achieve 20% trash reduction starting in year 3, followed by an incremental reduction of 10% per year until year 10.
6 years	RWQCB will re-consider the TMDL when 50% trash reduction is achieved (estimated date: 10/1/08)
12 years	Achieve zero trash target.

Potential Benefit: The negative effect of trash on the environment and human health is self evident, but formulating an effective strategy to reduce the amount of trash ending up in our rivers is not. Achieving complying with this TMDL will drastically reduce the amount of trash flowing to the mouth of the Los Angeles River and ultimately onto area beaches. This will help restore and preserve aquatic wildlife habitats and recreational uses.

Status: This TMDL was overturned in 2003 as result of a legal challenge filed by the Coalition for Practical Regulations. That court decision is under appeal by the RWQCB as of October 2005. Nevertheless, the County is proceeding as if the TMDL is in effect and is complying with all provisions. Our implementation strategy includes enhanced street sweeping, additional trash receptacles, public outreach, and installation of

engineered solutions such as trash screens. To-date, 60 percent of all catch basins within the unincorporated County area have been retrofitted with trash screens.

Fiscal Impact: The estimated annual cost to comply is about $2M, a number that is expected to increase as we take over the maintenance of trash screens installed by cities on County catch basins located within city boundaries.

Malibu Creek Watershed

The Malibu Creek Watershed is located about 35 miles west of Los Angeles and is one of the least urbanized watersheds in Los Angeles County. The 109 square mile watershed extends from the Santa Monica Mountains to the Pacific Coast. It drains into Malibu Lagoon and ultimately into Santa Monica Bay when the Lagoon is breached. About 92% of the watershed land use is classified as Vacant (81%) and Residential (11%). Majority of the development is located in the upper part of the watershed, within the cities of Calabasas and Agoura Hills. The average impervious area is estimated to be 8% based on assumptions on impervious areas in each land use type. It is important that water quality impairments of the Malibu Creek Watershed be addressed in order to protect the water contact recreation and wildlife habitat beneficial uses at Malibu Creek, lagoon, and adjacent beaches. To-date, the USEPA has promulgated two TMDLs for Malibu Creek, one for nutrients (2003) and another for bacteria indicators (2004); however, neither of these TMDLs include implementation schedules, which are currently being developed the RWQCB. Other TMDLs forthcoming in the Malibu Creek Watershed include metals (2012), benthic organisms effects (2012), and trash (2012).

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Malibu Creek Bacteria TMDL

Affected District(s): 3

Effective Date: January 2006 (tentative)

Responsible Agencies: County of Los Angeles, County of Ventura, the cities of Malibu, Calabasas, Agoura Hills, Hidden Hills, Simi Valley, Westlake Village, and Thousand Oaks; Caltrans, and the California Department of Parks and Recreation

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
120 days	Submit comprehensive bacteria water quality monitoring plan
1 year	Submit Implementation Plan
2 years	Submit results of the Reference Watershed Study
3 years (*may be extended to 6 years)	Demonstrate 100 percent compliance during summer dry-weather
6 years	Demonstrate 100 percent compliance during winter dry-weather
10 years (*may be extended up to July 15, 2021)	Demonstrate 100 percent compliance during wet-weather

Potential Benefit: High levels of bacteria indicators in waters have been linked to adverse health effects in humans, although this link is not conclusive. Nevertheless, it is the basis on which all bacteria TMDLs are established. Achieving compliance with this TMDL will reduce bacteria indicator levels in Malibu Creek and may improve and protect the water contact recreation beneficial use at Malibu Creek, Lagoon, and the adjacent beaches which are heavily used by surfers and beach-goers.

Status: The County is expected to have a major role in this TMDL's implementation. Work on the bacteria water quality monitoring plan began in Fall 2005, as is preliminary planning for the Reference Watershed Study. Development of the implementation plan has not begun, and implementation is expected to involve a combination of institutional and engineered solutions.

Fiscal Impact: The County's cost to conduct water quality monitoring associated with this TMDL is expected to range up to $150,000 per year; our cost to conduct the Reference Watershed Study is an estimated $250,000. Cost to achieve 100 percent compliance is expected to range in the tens of millions, but cannot be quantified more accurately without further study.

Marina del Rey Harbor Watershed

Located about 15 miles southwest of downtown Los Angeles in the Santa Monica Bay, the Marina del Rey watershed covers about 2.9 square miles and includes portions of the City of Los Angeles, Culver City, and unincorporated areas of Los Angeles County. About 80% of the watershed land use is classified as mixed residential (47%), receiving waters and marina facilities (21%), or retail/commercial/general office (12%). The Marina del Rey Harbor (MdRH) was developed in the early 1960s on degraded wetlands that formed part of the estuary of Ballona Creek Wetlands. It is an eight basin harbor constructed by the Army Corps of Engineers and is the largest artificial small-craft harbor in the United States. Like neighboring Ballona Creek, the three Back Basins D, E, and F and Marina Beach (Mothers' Beach), an enclosed beach within Basin D, have water quality problems necessitating TMDL development. To-date, the Los Angeles Regional Water Quality Control Board has adopted three TMDLs in this watershed: 1) MdRH Mothers' Beach and Back Basins Bacteria TMDL (2004); 2) MdRH Mothers' Beach and Back Basins Metals TMDL (2005); 3) MdRH Mothers' Beach and Back Basins Toxics TMDL (2005). The County does not anticipate any additional TMDLs for the Marina del Rey Harbor.

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Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL

Affected District(s): 2, 3, 4

Effective Date: March 18, 2004

Responsible Agencies: City of Los Angeles; Los Angeles County; Culver City; Caltrans

Requirements Affecting Los Angeles County:

Deadline (from Effective Date)	Action
120 Days	Submit Compliance Monitoring Plan Submit Small Drain Study
July 30, 2005	Submit Implementation Plan
3 years	Submit Results of Nonpoint Source Study Demonstrate 100% Dry Weather Compliance
4 years	TMDL Implementation Schedule and Waste Load Allocation Re-Evaluation Reference Beach Re-Evaluation
10 years	Demonstrate 100% Wet Weather Compliance *if using a Non-Integrated Approach*
18 years	Demonstrate 100% Wet Weather Compliance *if using an Integrated Approach*

Potential Benefit: Elevated levels of bacteria indicators in waters have been linked to adverse health effects in humans, although this link is not conclusive. Nevertheless, it is the basis on which all bacteria TMDLs in Los Angeles County are established. Compliance with this TMDL will reduce bacteria indicator levels in Marina del Rey

Harbor and may lessen the risk of adverse health effects resulting from contact with the water.

Status: Having jurisdictional control over 44% of the Marina del Rey Harbor Watershed, the County is expected to have a major role in this TMDL implementation strategy. The County is leading a required Nonpoint Source Study to determine the cause of the bacterial impairment. The $500,000 study will be completed by October 2006. Implementation strategies are currently being developed for wet weather compliance, but the plans have not been finalized. Dry weather compliance will be achieved with the physical diversion of three Flood Control District stormdrains to the Hyperion Wastewater Treatment Plant. All diversion structure design plans have been completed and are awaiting approval.

Fiscal Impact: The County is responsible for $230,000 of the $500,000 Nonpoint Source Study. The initial construction costs for the diversion of the dry-weather flows is estimated to be $3M, and they will require an annual cost of about $135,000 for maintenance. The total cost to comply for the County is an estimated at $15M over 10 to 18 years.

Marina del Rey Toxic Pollutants TMDL

Affected District(s): 2, 3, 4

Effective Date: March 2006 (tentative)

Responsible Agencies: County of Los Angeles; City of Los Angeles; City of Culver City; Caltrans

Requirements Affecting Los Angeles County:

Deadline (from Effective Date)	Action
12 months	Submit Coordinated Monitoring Plan
5 years	Submit Draft Implementation Plan Submit Special Study Results
5½ years	Submit Final Implementation Plan
6 years	TMDL Implementation Schedule and Waste Load Allocation Re-Evaluation
8 years	Demonstrate 50% Compliance with Waste Load Allocations *if Using a Non-Integrated Approach*
10 years	Demonstrate 100% Compliance with Waste Load Allocations *if Using a Non-Integrated Approach*

Alternatively, the table below illustrates the compliance timeline for LA County if an integrated approach for implementation strategies is chosen.

Deadline (from Effective Date)	Action
7 years	Demonstrate 25% Compliance with Waste Load Allocations *if Using an Integrated Approach*
9 years	Demonstrate 50% Compliance with Waste Load Allocations *if Using an Integrated Approach*
11 years	Demonstrate 75% Compliance with Waste Load Allocations *if Using an Integrated Approach*
15 years	Demonstrate 100% Compliance with Waste Load Allocations *if Using an Integrated Approach*

Potential Benefit: The Marina del Rey Harbor sustains a surprisingly wide array of aquatic and other wildlife; consequently, the State of California has designated a long string of beneficial uses for this vanishing resource in urban Southern California, including marine habitat, migration of aquatic organisms, fishing, etc. This TMDL resulted from evidence of sediment toxicity from the continual deposition of toxic substances such as copper and lead. There may also be bioaccumulation of these toxins in aquatic life which may be detrimental to human health if consumed. Compliance with this TMDL will improve water and sediment quality in the Harbor and restore its capacity to sustain its designated beneficial uses.

Status: Having jurisdictional control over 44% of the Marina del Rey Harbor Watershed, the County is expected to have a major role in this TMDL implementation strategy. Development of a coordinated monitoring plan will take place over the year following USEPA adoption. The County will participate in two special studies outlined by the TMDL to determine the effect of water impairment on sediment contamination and to evaluate low detection level techniques in the determination of water quality concentrations. This TMDL was recently approved by the Los Angeles Regional Water

Quality Control Board, and therefore, implementation strategies to achieve compliance are unknown at this time.

Fiscal Impact: The County will be responsible for 44% of the cost to conduct the required special studies. The total cost to comply is expected to range in the millions, but cannot be quantified more accurately without further study.

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San Gabriel River Watershed

Receiving drainage from the San Gabriel Mountains and the eastern part of Los Angeles County, the Santa Gabriel River Watershed encompasses about 640 square miles. About 84% of the watershed land use is classified as Vacant (46%), Residential (30%), or Commercial and Public (8%). To-date, only one TMDL has been promulgated to address trash in the upper part of the watershed. Four more TMDLs are anticipated in the coming years, including metals (2007), nutrients (2008), bacteria (2012), and organics (2012).

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San Gabriel River East Fork Trash TMDL

Affected District(s): 5

Effective Date: May 25, 2000

Responsible Agencies: United States Forest Service (USFS)

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
None	None

Potential Benefit: Achieving compliance with this TMDL will improve and protect aquatic wildlife habitat as well as recreational uses in the East Fork of the San Gabriel River, an area heavily used for picnicking on summer weekends.

Status: This TMDL does not necessitate action on the part of the County of Los Angeles.

Fiscal Impact: None

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Santa Clara River Watershed

The Santa Clara River Watershed straddles both Los Angeles and Ventura Counties. The upper part of the watershed is situated in Los Angeles County and encompasses about 680 square miles. Extensive patches of high quality riparian habitat thrive along the length of the river and its tributaries. Although still the least urbanized watershed in Los Angeles County, rapid development in and around the City of Santa Clarita in recent years is quickly reshaping the watershed's land use distribution. To-date, two TMDLs have been adopted in this watershed: 1) Santa Clara River Nutrients TMDL (2002) and 2) Santa Clara River Chloride TMDL (2005). We anticipate the promulgation of two more TMDLs by 2012 to address bacteria and organics impairments.

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Santa Clara River Chloride TMDL

Affected District(s): 5

Effective Date: 2004

Responsible Agencies: County Sanitation Districts of Los Angeles County

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
None	None

Potential Benefit: The TMDL primarily addresses the impairment of agricultural uses, specifically the irrigation of salt sensitive crops such as avocados and strawberries in Ventura County. Compliance with this TMDL may improve the quality of salt sensitive crops dependent on Santa Clara River water.

Status: Compliance responsibility for this TMDL lies primarily with the County Sanitation Districts of Los Angeles County. The County has no compliance responsibilities under this TMDL, although we have participated as a stakeholder in water supply related issues.

Fiscal Impact: Negligible.

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Santa Clara River Nutrients TMDL

Affected District(s): 5

Effective Date: 2004

Responsible Agencies: County of Los Angeles, Sanitation Districts of Los Angeles, County, Ventura County, City of Santa Claria, and Ventura County Municipal NPDES Permittees within the Santa Clara River watershed.

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
1 year	Submit work plan to estimate ammonia and nitrogen loadings associated with runoff from the stormdrain system.

Potential Benefit: Increased water quality monitoring in the Santa Clara River is intended to better characterize ammonia and nitrogen compounds loading from the stormdrain system. Complying with the TMDL is expected to reduce the amount of nuisance algae in the Santa Clara River.

Status: Compliance responsibility for this TMDL lies primarily with the County Sanitation Districts of Los Angeles County. The stormdrain system and other County facilities generally do not contribute significant amount of ammonia and nitrogen compounds to the environment.

Fiscal Impact: The cost associated with increased water quality monitoring in Santa Clara River is expected to be less than $50,000 annually. Monitoring may trigger source identification and ultimately the design and implementation of treatment strategies; but this is considered unlikely at this time.

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Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers approximately 177 square miles. About 85% of the watershed land use is classified as Vacant (55%) or residential (30%), although land use is in fact highly differentiated within the watershed. The northern part of the Bay have on average 85% of their land in open space, while in the central and southern portion of the Bay have on average 16% of their area in open space. Due to its sizable economic value as a resource for various tourism and recreational activities throughout the year, TMDLs addressing bacteriological impairments in this watershed were amongst the first to be promulgated by the United States Environmental Protection Agency (2003). An organics TMDL is also expected by 2007.

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Santa Monica Bay Beaches Bacteria TMDLs

Affected District(s): 2, 3, 4

Effective Date: July 15, 2003

Responsible Agencies: County of Los Angeles, Caltrans, Cities of Los Angeles, Calabasas, Malibu, El Segundo, Manhattan Beach, Santa Monica, Hermosa Beach, Redondo Beach, Torrance, Racho Palos Verdes, Palos Verdes Estates, Rolling Hills, and Rolling Hills Estates.

Requirements Affecting the County of Los Angeles:

Deadline (from Effective Date)	Action
120 days	Submit coordinated shoreline monitoring plan. Commence weekly shoreline water quality monitoring upon the plan's approval.
2 years	Submit implementation plan.
3 years	Achieve compliance during the summer dry weather period.
4 years	RWQCB Re-considers both the dry- and wet-weather TMDLs.
6 years	Achieve compliance during the winter dry weather period.
6 - 18 years	Begin achieving interim compliance targets for the wet-weather TMDL starting at year 6. The RWQCB will determine the interim and final compliance dates based on the chosen implementation approach.

Potential Benefit: Elevated levels of bacteria indicators in waters have been linked to adverse human health effects, although this link is not conclusive. Nevertheless, it is the basis on which all bacteria TMDLs in Los Angeles County is based. Achieving compliance with these TMDLs will likely reduce the number of beach closures along Santa Monica Bay and restore and protect its capacity to sustain recreational use year-round.

Status: Achieving compliance with the dry-weather TMDL primarily entails the physical diversion of urban runoff from 11 Flood Control District stormdrains to wastewater treatment plants. Alternative treatment options are also considered where the diversion of urban runoff is not feasible. All necessary diversion structures are targeted to become operational by the July 2006 compliance deadline for the summer dry-weather period.

Achieving compliance with any TMDL during and immediately following storms poses a monumental challenge. The County, in cooperation with other responsible agencies, submitted four implementation plans to the RWQCB in July 2005 describing the strategy by which each of the seven jurisdictional groups intend to achieve compliance with the wet-weather TMDL. The proposed strategies include both institutional measures and engineered solutions. The implementation plans are pending RWQCB approval. Once approved, the proposed implementation measures are expected to be incorporated into the County's 2006 Municipal Stormwater Permit.

Fiscal Impact: The total capital expenditure to comply with the dry-weather TMDL is an estimated $10 million for capital construction of low-flow diversion structures, plus operation and maintenance costs. Complying with the wet-weather TMDL is expected to cost up to $50 million over the next 10 to 18 years.

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